RICE LAKE NATIONAL WILDLIFE REFUGE

MILLE LACS REFUGE

SANDSTONE UNIT

1970

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UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF SPORT FISHERIES & WILDLIFE

FISH AND WILDLIFE SERVICE

MC GREGOR, MINNESOTA

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REFUGE PERSONNEL

Carl E. Pospichal	Refuge Manager
Leonard F. Hurd	Maintenanceman
Leland A. Thornbloom	Biological Technician

W.A.E. EMPLOYEES

Dwight C. Bailey	Laborer, Farm
Leslie E. Drone (Mr. Drone passed away 8/14/70)	Laborer, Farm

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RICE LAKE NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY - DECEMBER, 1970

I GENERAL

A. Weather Conditions:

	Precipitation			Max.	Min.
	Month	Normal	Snowfall	Temp.	Temp:
January	.24	.633	5.8	38	-37
February	.23	.599	5.5	48	-32
March	1.86	1.239	13.3	48	- 9
April	2.59	2.343	14.7	75	- 7
May	3.13	3.716	-	87	25
June	2.45	4.071	-	89	38
July	2.05	4.440	-	91	42
August	.81	3.970	-	91	32
September	1.70	2.749	-	89	24
October	4.85	1.575	-	78	19
November	3.12	1.258	17.0	57	- 8
December	1.21	.725	16.0	41	-18
Annual Totals	24.24	27.318	72.3	91	-37

The moisture listings for months in which snow fell include the precipitation which fell as rain and the snowfalls which were melted for measurement here at refuge headquarters. As usual our temperature data came from the Government Weather Station at the Sandy Lake Dam, located 23 miles north of refuge headquarters.

Snowfall for the month of January totalled 5.8 inches with a moisture content of .24 inches. Snowfall for the January-April period totalled 39.3 inches. Based on the average snowfall for the same period from 1960 through 1969 the average snowfall is 31.9 inches. Total precipitation for the same period ran slightly above normal. January was a bitter cold month with below zero readings being recorded on 20 days of the month. However, there was some daytime relief and the temperature got above freezing on four days. February weather gradually got warmer as the days lengthened and a very mild month was recorded. Snowfall for the month measured just 5.5 inches and no stormy weather was encountered.

March came in with a 4.5 inch snowfall followed by two rains. Mild weather prevailed and aside from the usual March winds, muddy roads and generally sloppy conditions the month was quite agreeable. Usually March gives one good blow with blocked roads and closed schools. However, March behaved like a lamb and mild weather prevailed. For the most part April was cool and damp. Above normal precipitation was received in the form of rain and snow. The weather moderated on the 24th and warm temperatures prevailed. May was an extremely wet month although precipitation was below normal. Rain was received on 18 of the 31 days and though the quantities received were small, the duration of cloudy skies, light rain and fog, no sun, made one think nicer weather was never coming.

June gave us some very warm, muggy weather. Once again we had many cloudy, rainy days but total precipitation received was below normal.

July and August were extremely hot and dry months. Daytime temperatures averaged in the high 80's which is unusual for this area. Even when daytime temperatures are high the nights are usually cool. This year the temperatures remained high at night and even made sleeping difficult. Coupled with the heat was the very dry conditions. By the end of August all streams and small water areas were either completely dry or almost so. Old-timers in the area were saying it was the dryest they had seen it since the 30's. Normal precipitation for this two month period is 8.511 inches compared to the amount received of 2.860 inches. The lawns at headquarters and other local areas turned brown and needed no mowing. Crops in the area suffered as did the wild and cultivated wild rice crops. The combination of heat and drought kept the heads from filling properly. Looking at the dry weather from the pleasant side it virtually eliminated the mosquitoe problem. Unfortunately it had no effect on the deer flys --they were as plentiful as ever.

September continued with the same high temperatures but by the middle of the month conditions began to change. Cooler weather moved in coupled with some rain and wind. The spell of dry

weather was really broken during October. Precipitation for the month totalled 4.85 inches compared to a normal of 1.575 inches. The trend continued into November and December with above normal amounts of precipitation being received. Deer hunters had plenty of snow for pursuing their quarry during the two day season November 14 and 15. Seventeen inches was received during November and sixteen inches for December. Temperatures and general weather conditions were about normal for the two month period.

To summarize briefly, precipitation for the year was 3.078 inches below normal. Moisture received for the past five years averages out to 24.10 inches which is 3.218 inches below the 27.318 established normal. Perhaps the "old-timers" are right when they say the country is drying up. Temperatures for the summer months were above normal. Spring, fall and winter temperatures were about normal.

B. Habitat Conditions:

1. Water:

Snowfall slacked off during January after a heavy fall the previous month. This gave wildlife, particularly deer, a break. Total precipitation of .24 inches was contained in 5.8 inches of very light snow. February produced even less of the same fluff which did not crust or otherwise produce conditions to further hamper wildlife movements. March and April brought near-normal precipitation. The ice went out of the Rice River on April 15, and Rice Lake was open by April 28. Warm days and cool nights provided for a uniform thaw. Though water elevations rose to the high nineties there was no special difficulty in controlling the flow. By the first week of May it was possible to open the lake control as the river level was dropping off.

Precipitation from May through September was far below normal with 10.14 inches of moisture received as compared to 18.95 inches usually expected. By July the result was apparent on the water areas though habitat remained excellent with exposed mud flats providing heavily-used loafing and feeding areas for waterfowl and shorebirds.

October, November and December precipitation was above normal and pool areas refilled to previous levels. By the end of the year the water areaa were again at winter elevations. November snowfall was 17 inches and December had 16 inches. There was some settling and no restriction of wildlife movements at the year's end.

Rice Lake was frozen over at 96.00 on November 15. The river froze on November 22, with the control elevation 96.20. The high for Rice Lake was 97.44 on May 3, and for the Rice River Pool 97.80 on April 28.

Snowfall received during 1970 was three inches less than the year before but total moisture was nearly three inches more. Overall, precipitation for the year was nearly three inches below normal.

Generally, water conditions during the summer were excellent for wildlife use.

2. Food and Cover:

Water elevations were such as to permit the good growth of early emergents such as roundstem bulrushes which provided both cover and a buffer to wave action. Sunlight was able to penetrate the relatively shallow and clear water with the result that growth of submerged aquatics was heavy. Wild celery and several species of pondweeds produced well. Wild rice beds were more extensive than during the previous year and produced good seed crops. Although some areas were shallow for picking by rice harvesters they were accessible to large numbers of waterfowl and were heavily utilized by them. It was evident that such shallow areas functioned well to provide food and cover for waterfowl, which is their primary purpose. The wild rice harvest is not a reliable indicator of the magnitude of seed and feed production since many factors including weather, water and harvest efficiency of the pickers.

Cultivated crops and browse units got a good start in the spring and received late-season rains so these also proved attractive to waterfowl. October rains flooded portions of the croplands which were subsequently completely utilized. Standing corn was readily taken by geese and other wildlife. That corn knocked down by raccoons and deer was taken by ducks and other species not able to reach the standing crop. Buckwheat, rye browse, clover and other food crops were also attractive to waterfowl.

Much food was available to shorebirds on the exposed mud flats and along their edges. Such habitat usually determines the extent of use of the refuge by these species; if none is available, very few shorebirds may be found and some species do not stop at all. Both ducks and geese used these flats heavily for loafing and the shallows for feeding.

Wood ducks roosted primarily in the shallow areas of Rice Lake but a portion of the roost site along Rice River was also utilized.

Nesting cover was abundant in agricultural units and in the many grassland units managed for this purpose. The island in Rice Lake was again a favored nesting place for widgeon and a pair of Canada geese.

II WILDLIFE

A. Migratory Birds:

1. Whistling Swans:

Although whistling swans were seen flying over the refuge several times during the early spring, none stopped in until the third week of April when ten birds landed on Rice Lake. As is usual during the spring swan movement through this area, ice conditions prevailed over most of the refuge water areas. The few birds using the refuge found limited feeding areas in small patches of open water. By the time the ice was gone the swans had moved on through.

There were no observations of swans during the summer.

Fall migrants were two weeks later in using the refuge than during the previous year. The second week of November had 250 whistling swans on Rice Lake. The following week there were 150 feeding in patches of open water and these moved on. For a week thereafter flocks were seen flying over but there was no open water for feeding or resting on the refuge.

Total use by swans during the year was 2,870 days, down from the 3,850 days in 1969.

2. Geese:

For the first time since a refuge flock of Canada geese has existed on this refuge there were no birds remaining during the winter months. All migrated normally during the previous late fall.

During the third week of March the first migrant Canadas arrived at the refuge. This was the same time period but the six which came in on March 19, were less than the 15 which first scouted the refuge in 1968 and '69. Conditions were too rough and these birds left for a week, coming back with the usual 15 the following week. Some birds were on their nests by April 15, but a few additional geese continued to trickle into the refuge, reaching a peak population of 500. Some of these again chose nesting areas outside of the refuge on public and private lands over much of Aitkin County.

Refuge production of Canadas was 150 with about another hundred young produced off the refuge. Farm ponds, bog lakes and rivers plus commercial rice paddies were favored outside nesting areas. Thus far, birds have been well protected on these sites.

As soon as young Canadas were on the wing in late July or early August they began concentrating on Rice Lake with numerous exercise flights to outside areas and other parts of the refuge. The first non-local Canadas were seen on the refuge in mid-September but it wasn't until the first week of October that a major influx occurred. By the second week of the month the refuge large Canada population had reached the all-time high of 5,000 birds. In addition there were 750 Lesser Canadas on the refuge at the same time.

Fall rains formed pools and kept wet areas of the agricultural units attractive to geese and cropland were heavily utilized. By November 21, all geese had moved southward.

Blues and snows were normally present in small numbers during the spring with a peak of 300 early in May and diminishing numbers throughout the month. All had moved north by the end of May.

Fall flights were only moderate, beginning in late September and running through the second week of November. The peak of 800 was reached during the fourth week of October. Peak use rose and fell during the fall as some flocks remained only a few hours and others for several days.

Total use of the refuge by all species of geese during 1970 was 181,468 days, just under 64,000 more than in 1969.

3. Ducks:

A pair of mallards braved the elements in early March but found things not yet to their liking and moved out. A month later the usual early birds arrived though the ice was still covering refuge water areas. A small open area in Rice River below the outlet structure provided a feeding area for small numbers of mallards, blacks, widgeon, wood ducks and some of the divers. Buildup was slow and the peak of the spring movement was not reached until the first week of May. At that time about 16,000 ducks were using the refuge. These were mostly widgeon, blue-winged teal, ringnecks and scaup.

Summer use was good by most species which normally spend this period here. The goldeneye was the only species which showed a substantial decrease in use during the May to August period whereas most species showed increased use. Total use for the summer period was up 30 per cent. Production of 1,850 young was up from the 1,605 in 1969, no particular species showing a large increase but most showing some. Widgeon and wood ducks were the heaviest producers with bluewings close behind. Mallards were fourth.

The fall peak of 84,110 was down slightly from the 86,840 of a year ago but total use was up by over 300,000 days. Mallards and widgeon show the most notable increases in peak use but ringnecks were down by 10,000 and canvasbacks by 2,000. Total duck use for the year was 4,418,988 days, an increase of almost 439,000 over the previous year.

4. Coots:

Coots arrived on the refuge as a group of 20 during the second week of April, the same number and week as a year ago. The peak of the spring migration was reached in early May when 500 birds were noted, mostly on Rice Lake. The summer population of 100 has been about the average for several years and production was 50 young.

By August there were a few coots moving into the refuge from other areas and the population continued to climb to a high of 15,000 in early October. After that date they dropped off rapidly and all had left the refuge by the first week of November. This peak was back up to the 1968 level. The fall exodus was earlier and more rapid than during either of the past two years.

Total use for the year was 309,540 days. This was up from last year but about 150,000 less than in 1968.

Total waterfowl use of the refuge in 1970 was 4,912,866 days.

5. Other Water Birds:

For the second year the great blue herons refused to come back to the island rookery where nests were robbed of eggs and young by raccoons. The first of these birds to return were 11 which moved into the new rookery along the Rice River on April 5. About 100 used the refuge during the summer. The last one was seen on November 4. Nearly 50 active nests were found in the rookery.

The first common loon was seen on the refuge April 16, with a peak spring population of ten. A pair remained on Mandy Lake throughout the summer. The fall peak was 15 with the last observation also on November 4.

Pied-billed grebes were common throughout the refuge during the spring through fall. First three arrivals were on April 14, and the last seen were on October 29. Fall peak was 100 birds. Horned grebes used the refuge in small numbers during late April and then moved on as the ice went out of the lakes. Two red-necked grebes were seen several times in mid-April along the Rice River.

American bitterns were noted regularly on the refuge from late April through October.

The first two sandhill cranes returned on April 11, and remained to nest on the refuge. They remained until early November.

Sora and Virginia rails were common summer residents of the refuge, arriving in May and remaining through September. Soras were especially evident during the early fall on Rice Lake but their calls could be heard throughout the summer.

Belted kingfishers were early April arrivals, common summer residents and late fall migrants, remaining well into November.

6. Shorebirds, Gulls and Terns:

Spring visitors included the killdeer first on April 8, after which they became common throughout the summer and up until mid-October. Nests along refuge trails and in fields were found. Common snipes moved in at about the same time and nested throughout the refuge. Several hundred concentrated on wet flats and pool margins during September. Spotted sandpipers and lesser yellowlegs came in late April and were noted regularly throughout the summer. Other species noted during migrations were semi-palmated and golden plovers, pectoral and least sandpipers.

Herring gulls and ring-billed gulls moved into the refuge before the ice left the lake. Although they did not remain in large numbers they were present as visitors until November.

Black terns and common terns did not arrive on the refuge until mid-May when weather conditions were considerably improved. Both were seen regularly until late September and nested on

the refuge and neighboring water areas. Peak populations ranged from 100 to 150 birds.

B. Upland Game Birds:

It was a good year for ruffed grouse nesting and the incidence of drumming in the spring indicated a good brood stock. Brood observations were more common than for several years. Again, survival of young was probably low as fall numbers did not measure up to expectations. Although no specific observations of grouse predation were made, the impact of hawk predation on these birds has been an intriguing question for some time. Red-tailed hawks and broad-winged hawks are quite common on this area and their favored perches are in trees along refuge roads and trails. On several occasions the refuge manager has observed both species with freshly-killed or still alive gray squirrels, ground squirrels and various species of ducks, including ringnecks and teal. Masses of grouse feathers along these roads indicate some type of predation on these birds, which also greatly favor trails for their food and grit needs.

Other natural causes whether by predation, exposure or disease apparently contributed to population control on this species, ending up with a spotty fall distribution from fair to good. Hunting success on the open area was fairly good. Many hunters prefer to drive roads and trails; on the refuge they are required to walk and those who do, prefer it that way.

Sharp-tailed grouse showed good use of the refuge during 1970. The total refuge population held about the same as a year ago but distribution over the area was more general.

Birches again appeared to be the favored trees for budding both by sharptails and ruffed grouse as has been the observation of this writer for many years in northern Minnesota. Hazel is another heavily-utilized and valuable species here for ruffed grouse management; not at all the obnoxious weed species it is sometimes considered to be. It provides superior food and cover for this species and should be favorably considered in the timber management program here.

Woodcock use of the refuge was extremely light throughout the summer period. An occasional observation was made near East Lake and adjacent to the Rice River Pool but singing counts showed very light use. There qas no notable fall migration observed using the refuge. Habitat conditions are suitable for many more woodcock than presently use the area.

C. Big Game Animals:

Before the last of the snow was gone in the spring the white-tails began moving back into summer range from yards on the south and west sides of Rice Lake. A few tried to winter in the islands on the north side of the refuge but did not make it. Remains of several carcasses were found after having been worked over by scavengers and evidence of one chase and kill by coyotes was found. Deer from that area normally move into the Portage Lake yard but early, heavy snows may have forced them to remain. Had it not been for a slacking-off of snowfall early in the winter the loss could have been much greater in other areas as well.

Production of fawns was good with twins most common and some sets of triplets observed. Food and cover, both natural and cultivated, were more than adequate for the number of deer which used the refuge.

Because of a generally reduced population of deer in Minnesota the hunting season was restricted to two days in this area. Kill data collected during the season showed the first good proportion of young deer taken in three years.

By the time the snowfall had accumulated enough to cover crop residues in the fields and to affect feeding in other areas in late November the deer moved to winter areas. Loose snow was not restricting deer movements at the end of December.

Moose moved in and out of the refuge occasionally during the year. Tracks seen along trails were usually the only signs that they had been on the area but some observations were made. Sightings were usually in the vicinity of Mandy Lake.

Black bear observations throughout the spring, summer and fall could be considered quite common. Local residents and other visitors to the refuge made a number of reports. A winter den was located by Mr. Thornbloom at the site of his son's encounter with a large bear the previous fall. This animal had denned in a grass nest located in a clump of willows and surrounded by open bog. When approached by Thornbloom and Pospichal on March 26, the bear was alert and left the nest though there was still a heavy snow cover more than two feet deep.

One bear was badly wounded by deer hunters on the north side of the refuge. They made no effort to track it though it left an almost unbelievable bood trail in the snow. Signs showed the impact of the bullet knocked it flat. Apparently it was merely a target for practice. It is still difficult to believe

that an animal could lose that much blood and still keep going. It was tracked by refuge personnel for a couple of miles until it finally left the refuge and for another half-mile or more. By that time the bleeding had apparently stopped and the animal was still moving. This writer has followed many blood trails over the years but never one like that. Another bear was killed and taken out on the south side of the refuge.

Refuge oaks again provided much food to fatten the bears for the winter. Evidence was the broken limbs on these trees throughout the refuge.

D. Fur Animals, Predators, Rodents and Other Mammals:

Signs of mink were not common on the refuge during 1970 but a small population did exist, especially around the water control structures and in the ditches. As with other animals using the watercourse through the refuge, some were taken by outside trappers. Generally the population is low and pelt prices did not encourage trappers to work on them.

The number of muskrats increased somewhat this past year. Eat-outs in dense stands of vegetation provided excellent openings for waterfowl use. Low pelt prices again brought very little interest among trappers.

Numbers of otter on the refuge remained fairly stable. Signs such as fishing holes in the ice and slides were evident along the Rice River and the ditch from Rice Lake. Occasionally otters could be seen playing along the river in the vicinity of the public fishing area, bringing many pleasant comments. No trapping was permitted on this species.

Beaver colonies which now exist on various parts of the refuge are considered beneficial in creating and maintaining waterfowl habitat. Some difficulty was had with blockage of the Beaver Pool control until an adequate barrier was set up. Wood duck roost habitat was maintained by a colony on the south side of Rice Lake. A new lodge was built along the Rice River Pool ditch and provided excellent opportunity for Long Lake Conservation Center students and others to learn about these animals.

Weasels were quite common on the refuge but attracted little or no interest other than occasional observations.

Red foxes are definitely down in population but were occasionally noted. Several were taken by a local trapper along the refuge boundaries. Two active dens were located during the early summer.

The coyote population using refuge lands appeared down somewhat but occasional observations were still possible throughout the year. The decline came about some time during the late winter to fall period. Several were taken by local residents. Remains os several deer cleaned up by coyotes and foxes were found but evidence of predation on living deer was limited. Mr. Thornbloom observed a coyote in close pursuit of a red fox with the fox running for its life.

Raccoons were down drastically from the previous year. Although there was still an adequate population on the refuge, sightings were much less frequent and signs were less evident.

Badgers persist on the refuge in low numbers but several observations of these animals were made. Diggings were fairly common in the sandy refuge soils.

Bobcats worked on the fish moved into the springs along Rice River by oxygen depletion. A low population of cats uses the cedar swamps and heavily forested areas south and east of Rice Lake.

Skunks appeared slightly more common than the year before, at least on the basis of actual observations. A small number were removed from nesting sites in conjunction with 'coon control in the spring.

Porcupines continued to maintain a moderate population on the refuge. No appreciable damage to valuable trees was noted. Visitors enjoy seeing them along refuge roads.

Red squirrels remained common. Gray squirrels were present in small numbers and an occasional melanistic gray was noted. Fox squirrels were rare.

Chipmunks were common through the refuge. Thirteen-lined ground squirrels were fairly common in open areas. Franklin's ground squirrels were noted only occasionally.

Other small mammals noted in fair to good numbers were meadow voles, red-backed voles, white-footed and jumping mice, star-nosed moles, least and short-tailed shrews.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies:

Goshawks and occasionally roughlegs might be observed during the winter months but migrants moved in beginning in March and continuing through April. Hawks using the refuge included the above species, red-tails, broad-wings, marsh hawks, sparrow hawks,

sharp-shins, and Cooper's hawks, Ospreys visited the refuge during the summer months and turkey vultures were spring and fall visitors. Northern shrikes were present throughout the winter in small numbers.

The first bald eagles seen in the spring were the two which nest on the west side of Rice Lake. They were first seen at Mandy Lake on February 27, and were noted at the nest on March 4. The peak spring population was eight on April 17. By late September the first migrants were noted. As usual these ran heavily to immatures. The peak fall number was 22, of which 17 were immatures and five adults. The last sighting was two immatures on November 27. An adult was shot by a grouse hunter along the refuge grouse hunting area. It was turned over to the refuge but died. The carcass was turned over to G.M.A. Pinkham.

Barred owls were the most common of several species using the refuge. Great-horned owls were not seen nor heard as regularly but were also present in fair numbers. Snowys were much more common than in 1969 and were seen regularly during the late fall. One was shot by a person unknown and picked up by a local farmer. Screech owls and saw whet owls were present in small numbers. Long-eared owls were uncommon. Great gray owls were not observed.

Although the main flight of crows wintered south of this area there was an occasional strggler noted throughout even the winter months. Rough fish from rescue operations in the winter and croplands in the summer attracted these birds. Several hundred could be seen at the fields in the fall.

Ravens were present throughout the year in small numbers, usually more common during the winter months but also more obvious at that time.

Magpies were only occasional visitors to the refuge.

F. Other Birds:

Most species found on the refuge bird list were seen at some time during the year. Pine grosbeaks were common in the late winter but did not show up again in the fall. Evening grosbeaks, pine siskins and purple finches were less common than a year ago.

G. Fish:

Fish rescue operations on Rice Lake continued until March 6. By that time water conditions were such that operations were no

longer practical. After a good run and hatch of northern pike during the spring and summer there was again a heavy crop of young fish available. Rescue again began on November 10, at the lake outlet.

The total take for the operation ending March 6, was 58,440 northern pike weighing 30,681 pounds. In addition, the following rough fish were caught: bullheads 5,280 pounds; perch 4,475 pounds; suckers 2,370 pounds; buffalo 80 pounds; dogfish 1,190 pounds and burbot 65 pounds. By the end of December an additional 31,299 northern pike weighing 9,161 pounds had been taken for stocking other Minnesota lakes. Some perch suffering from oxygen shortage provided food for bobcats and other wildlife at the springs.

Excellent summer populations of northern pike and bullheads were available to summer fishermen in the public fishing area.

H. Reptiles and Amphibians:

Garter snakes were the most common refuge reptiles. Less common were green snakes and red-bellied snakes. Snapping turtles were most common along the Rice River as were painted turtles.

Spotted salamanders, leopard frogs, mink frogs, copper frogs, spring peepers, tree toads and common toads were all found in good numbers.

I. Disease:

No disease was noted among refuge wildlife.

III REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development:

The bulk of the summer was spent on renovation and posting of the south boundary. This area had been neglected for many years making it impossible to find the boundary line in places. Work consisted of finding corner and line monuments, dozing the line and in low areas clearing the line with chain and brush saws. The main line has been cleared but much remains to be done. The existing line needs widening, levelling and discing so some type of sod can be established so the boundary can be maintained on a regular schedule by mowing or discing.

A small concrete stop log structure was poured which will make a small impoundment for waterfowl habitat. Routine maintenance

jobs such as snow removal, blading of roads, roadside mowing, clearing of water controls, etc., were carried on.

Painting was completed on all doors at headquarters and several small storage-type buildings were completely painted. Much maintenance time was spent at the picnic area. Work included picking up litter, emptying garbage cans and mowing the area. Picnic tables received a coat of paint.

A contract was awarded to Terry Olson of McGregor for construction of two new toilets at the picnic area. Each building measures 6' x 7' with two stalls over a concrete vault. Each cost $1,097.50 for a total cost of $2,195. By the end of the period all that remained was to install the stools and hang the doors. The old toilets, although less than 10 years old, were in need of replacement.

The never-ending job of rock picking continued on the west fields. All rock was placed as rip rap at the Rice Lake control. Fence repairs were made as needed. Several old fences were removed. The propane storage tanks at headquarters were painted. All septic tanks were pumped. New cables were put on the Rice River control gates. Gravel hauled and spread on refuge roads amounted to 213 yards.

Posting of the Sandstone Unit is three-fourths completed. The west side remains to be done and will take considerable time. The area runs through quite heavy timber and parallels a steep, rocky bluff sloping down to the Kettle River. This line has never been cleared and will take a lot of time as the bulk of it will have to be cleared by hand with chain saws.

B. Plantings:

1. Aquatic and Marsh Plants:

Three hundred pounds of wild rice was seeded in Rice Lake from the Rice Landing northeast. It was planted in a strip approximately 30 yards off shore (See NR-7). This area doesn't produce much rice and it is hoped a new bed will be established. If this works more area will be reseeded in the future.

Of the rice planted in 1969 in the Rice Lake and West Field impoundments success was very poor. Some wild rice did go back for seed and these areas may still have a better catch.

2. Trees and Shrubs:

None.

3. Upland Herbaceous Plants:

None.

4. Cultivated Crops:

Field conditions were fairly good although the weather was quite cool. Moisture conditions were adequate. Approximately 28 acres of field corn was planted June 8. It was fertilized at the rate of 200 pounds per acre. On June 19 it was sprayed with atrazine at the rate of three pounds per acre. The kill on quack grass and weeds was excellent. Extremely dry conditions during the summer coupled with the heat was hard on the crop. The estimated yield was 25 bushels per acre. By the end of November, all of the corn had been utilized by wildlife.

Twenty-four acres of oats was planted June 12 which is quite late for this country. It was drilled in and not fertilized. The light yield of 15 bushels per acre was the same as last year. It was consumed primarily by geese, sharptails and deer.

Buckwheat was planted on twenty-three acres June 17 without any fertilizer. The yield was ten bushels per acre. This crop was used by all forms of wildlife and by late fall was completely utilized.

Hay strips covered 145 acres. Hay yield was good and the strips received quite heavy use from geese.

Rye planted on August 21 in the Rice Lake fields produced excellent fall browse for Canada geese and deer. One of the few light rains of the month came right after planting and got it off to a good start. The geese grazed the rye completely leaving only bare ground in several places. Eighteen acres were kept fallow.

C. Collections and Receipts:

The wild rice harvest began September 8, 1970 and ended September 22, 1970. The number of boats varied from a high of 39 to a low of eight. The following table shows the number of boats on the lake for the ten actual days of ricing.

Date	No. Boats	Date	No. Boats
9/8	30	9/17	20
9/9	34	9/18	31
9/10	39	9/19	6
9/11	34	9/20	21
9/16	34	9/22	8

During the 10 day harvest period a total of 20,805 pounds of rice was picked. The Government share of 8% amounted to 1,664 pounds. There was no cash return to the Government this year as all rice was retained for seed. Three hundred pounds used by the refuge and balance of 1,364 donated to the State of Minnesota for reseeding in the surrounding refuge area. The Indians appeared to be in favor of this arrangement.

The Indians chose the starting date after one of their members, Archie Moose and wife, made one survey of the rice crop. They also made the choice of how many boats to allow on the lake. Some Indians that had been considered "local" for the past 15 years such as the George Boyd family were excluded. There was the usual static from George Aubid, Sr. and George Aubid, Jr. on the length of the season and the state of ricing in general as related to the welfare of Indians. In fact, they requested a 15 day season which was denied. Before the ten day season was over almost half the ricers had quit because they could not pick enough rice to make it worth their time.

Ricing began on Tuesday and the Ricing Committee requested there be no ricing on Saturday and Sunday so they could rest and have time off. This request was granted after them being advised it would be to their advantage to continue ricing and take advantage of weather and so forth. The Committee has always felt the Refuge Management made them rice ten straight days for some unknown reason whereas all records clearly indicate it is definitely to their advantage to work continuously.

Since the refuge no longer has a say in selection of ricers it was decided to discontinue individual ricing records. This the Indians were heartily in favor of as welfare and tax people aren't so apt to check on them. Procedure now is to issue each pair of ricers a small slip showing the pounds picked and the Government share of eight per cent. This is presented to the buyer and payment is made. A duplicate slip is kept by the refuge. The Indians and buyers both liked this procedure as it speeded up and simplified the operation.

Ricing conditions were far from ideal. Due to an extremely dry summer Rice Lake level was very low and many areas were too shallow to rice. In addition, the high temperatures in August had a detrimental effect on the plants and the heads didn't fill out properly. Also some rain and windy conditions occurred. The rain and wind combine to knock ripe kernels into the water - good for the waterfowl but not for the Indians. Of 34 boats issued permits to rice the average number of boats on the lake for the ten days came to 26.

A total of 34 boats, harvesting 10 days during the period September 8-22, picked a total of 20,805 pounds of rice. The Government share of eight per cent amounted to 1,664 pounds. As mentioned earlier there was no cash return to the Government. The lowest price paid per pound of green rice was $1.20 and the highest $1.43. The average price paid was $1.28. On three days they felt the price was not high enough and they took their rice home or sold it elsewhere. The rice buyers are not as eager to buy this rice as they used to be. Commercial paddy rice is becoming more popular and available. Also, the buyers feel Rice Lake rice quality is down from years past.

Refuge personnel have noticed a decrease in rice quality. Before rice was so valuable the Indians were more careful and prided themselves on picking good clean rice. The ricers that had too many broken rice heads in their pick were scolded by Committee members. This of course, kept the ricers on their toes, and they were careful to keep the rice clean. A few years ago they wouldn't think of picking in the rain or when the rice was wet. Now the buyer gets the rice, heads, cigarette butts, leaves and anything else that falls into the canoe. A few have been wetting their rice to gain a little weight. Naturally the buyers have reacted by not bidding so high for their rice.

The average season take per boat (less the Government share of eight per cent) amounted to about 736 pounds which at an average price of $1.28 gave each boat an income of $942.08. The average number of boats picking for the ten days was 26 and the lowest number of boats picking on any one day was six.

D. Control of Vegetation:

Control work was done by bulldozer on the south boundary line to clear lines of brush and other small tree growth. Roadside mowing was done on all refuge roads and trails. Thistle patches were mowed before the bloom stage. Atrazine was applied to 28 acres of corn at the rate of three pounds per acre.

E. Planned Burning:

None.

F. Fires:

None.

IV RESOURCE MANAGEMENT

A. Grazing:

Two permittees grazed a total of 32 animals for a total of 176 AUM's.

B. Haying:

The demand for hay continues to decline. Several hay units went begging for lack of interest. The small farmer will soon be a thing of the past in this area if the present trend continues. Seven permittees cut a total of 286 tons of hay.

C. Fur Harvest:

None.

D. Timber Removal:

None. The new Timber Management Plan is now in effect and cutting will commence in 1971.

E. Commercial Fishing:

None.

F. Other Uses:

None.

V FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Waterfowl Banding:

No quotas were given for the 1970 banding season other than to band as many ring-necked ducks as possible. This was to be done under a cooperative arrangement with the State of Minnesota to evaluate populations and harvest of birds using refuge areas and those not using refuges. Feared over-harvest of this species in the past few years prompted this study. It is thought that some additional heavily-utilized ringneck areas might eventually have

to be closed to gunning.

Under the above arrangement, the State maintained all banding supplies and records and furnished much of the equipment needed for night lighting. Previous investigations had shown this to be the most practical way to catch ringnecks on this refuge. Banding return data will be furnished to the refuge. The program will run for five years.

Basically, two units were used in the capture operations; one air-boat and one conventional Grumman sport boat with small outboard motor. A third refuge unit of sport boat type was also used part-time. Dr. Lewis Cowardin of the Northern Prairie Research Station at Jamestown, North Dakota and Area Biologist Jerry Cummings operated the air boat; Leon Johnson, Minnesota Waterfowl Biologist and assistant ran the State unit. The Manager and Biological Technician operated the refuge unit. Mr. Hurd, Maintenanceman, accompanied the air boat on one night's operation. It has been pre-determined that a 500 bird sample would be adequate. Operations were conducted on three successive nights with no moon, beginning just after dark the first evening and successively later as it became apparent that the bulk of the birds were caught after midnight. Operations were generally over by 3-4 a.m. During the three nights 511 ringnecks were caught and banded and several others were released unbanded.

Perhaps some insight was given as to the evening flights out of the refuge so often mentioned in the past. Judging from the experience this past fall it appeared that perhaps many of these birds move out just at dusk but return to the refuge some time after midnight. At any rate, birds were much easier to find at that time and usually in the same places checked earlier with lesser success. This will bear further investigation.

Another interesting aspect of the study was the incidence of leeches under the nictitating membrane of one or both eyes of many of these birds. Although this is not a new observation here, its magnitude has never been evaluated. On basis of 293 birds checked 63 carried leeches in one or both eyes. Also, it appears to be a problem unique to this area. Specimens were collected for identification and this information will be available later. It is now assumed that the leeches are picked up here, engorge themselves and drop off the bird voluntarily, most perhaps completing their life cycle on this area. On two successive days several infested birds were held over in crates for daylight photographing. In both cases the leeches were no longer present when the birds were checked two to three hours after crating and the eyes were clear and bright with no external signs of injury.

Limited time for banding operations on ringnecks creates somewhat of a problem in normal years since large numbers of birds are not normally available until late September or early October, a very short time prior to the hunting season. Rice harvest usually runs into this period. Considering time, equipment and manpower plus experiences in trapping methods, the night-lighting appears to be the best method tried to-date for taking good numbers of ringnecks in a short time on this area.

B. Canada Goose Flock:

Studies were continued on the expansion of the refuge goose flock outside of the refuge itself. Investigations and mapping of nests and nesting success continued. This data will be worked up when of sufficient quantity.

C. Artificial Nesting Platforms:

After five years of testing with no success or indications of interest by geese, the goose platforms were removed from the marshes. Natural or dirt island sites continued to get good use.

The few duck nesting platforms set out four years ago showed no sign of use but were left out for one more year of trial.

D. Wood Duck Nest Structures:

Five years of exposure to the elements have shown no detrimental effects on wood duck nest capsules made of fiberglass. Use has increased gradually by wood ducks and hooded mergansers and no signs of entry or predation have been observed. Five translucent capsules still show no sign of wildlife use. These capsules are now manufactured in the Twin Cities and are widely advertised.

Wood and metal houses also proved attractive to waterfowl and other wildlife. Overall use by waterfowl ran about 15 per cent.

E. Soil Mapping:

Mapping of refuge soils by the S.C.S. was completed and the results summarized. Payment for services was made. Mapping has also been completed for the Sandstone Unit.

VI PUBLIC RELATIONS

A. Recreational Uses:

Probably more people used the refuge on tours to see wildlife than for any other reason. Some local residents drove through nearly every day and often reported observations of bear or other wildlife not see at will. Guided tours included school groups and both adult and student classes from the Long Lake Conservation Center.

The refuge was also used by 4-H groups for conservation education and also to assist the refuge in litter cleanup.

The picnic area was attractive to many persons, especially on evenings and weekends.

Hunting and fishing brought in many refuge users. The older folks continued to show appreciation for being able to fish from the bridge on Rice River.

B. Refuge Visitors:

See attached list.

C. Refuge Participation:

See attached list.

D. Hunting:

1. Deer Hunting:

The deer hunting season was curtailed in the area of the refuge for the third year, dropping from a five-day season in 1969 to a two-day season in 1970. A low deer population was given as a reason and many sportsmen's clubs fought for a closed season. Generally, public opinion favored no deer season.

Hunting success for the first day, November 14, ran 14.3 per cent with 38 deer taken. By the second day it had dropped to 6.5 per cent success. The percentage of success for the two-day season was 10.7 with 53 deer taken. This about makes the same ten per cent ratio as shown during the past two years.

The total take for the two days was only seven less than a year ago when the season was three days longer. Good snow cover was an important factor here. However, the 1970 season showed a better age ratio. Of the 53 deer checked, 20 were adult bucks, 15 adult does and 18 were fawns. Fawns were very low in the bag the past several years.

B. Refuge Visitors:

Name	Organization	Date	Purpose
Fritz Krege	Bureau	2/2/70	Move grader to Crescent Lake
Larry Bunge	Minnesota State Forestry	2/11/70	Burning permits
Joe Wilson	Minnesota State Forestry	2/11/70	Burning permits
George Moriarty	Soil Conservation Service	3/23/70	Visit
N. Haugen	Aitkin County Agent	3/23/70	Visit & orientation
Robert Sharp	R. O. - Fisheries	5/1/70	Visit
James Monnie	R.O. - Asst. Supervisor	5/4/70	Inspection
Claire Rollins	R.O. - Staff Specialist	6/29/70	Inspection
Dave Dickey	Minnesota Game Manager	7/22/70	Water elevations
Les Blacklock	Wildlife Photographer	7/23/70	Photos for new book
Lyle Miller	Regional Safety Officer	8/26-27	Safety inspection
Paul Krueger	Warden- Wild rice-Minnesota	9/2/70	Req. wild rice seed
Fred Anderson	Free Lance Photo-Journalist	9/9/70	Ricing article material
Bern Keating	Free Lance Photo-Journalist with National Geographic	9/16-17	Ricing article material

In addition there were many visits by Harry Pinkham, U.S.G.M.A., Lester Dundas, Staff Specialist of the R.O., local foresters, game wardens, timber cruisers, Minnesota State Fish Rescue crews and others too numerous to list.

Mr. John Gill, Instructor of Wildlife Technology at the Brainerd Vocational-Technical School was a frequent refuge caller and uses the refuge for student field trips.

Group	Date	Participation
Aitkin County Sportsmens Club	1/7	Participate in deer lecture.
Chisholm Sportsmens Club	2/7	Slides and talk.
Fleming 4-H	2/21	Show movie and talk.
Hill City Sportsmens Club	2/23	Movie and talk.
McGregor School	3/18	Class lectures.
Cloquet High School	4/8	All day panel discussions.
Aitkin Biology Students	5/13	Talk and tour.
Hibbing Assumption School	5/20	Tour and talk.
McGregor Grade School	6/24	Tour and talk.
Covenant Pines Bible Camp	6/25	Talk and tour.
Long Lake Conservation Center	7/2	Talk and banding demonstration.
Covenant Pines Bible Camp	7/9	Talk and tour.
Long Lake Conservation Center	7/16	Talk and banding demonstration.
Covenant Pines Bible Camp	7/16	Talk and tour.
Covenant Pines Bible Camp	7/18	Talk and tour.
Covenant Pines Bible Camp	7/23	Talk and tour.
Covenant Pines Bible Camp	7/31	Talk and tour.
McGregor Flower Club	8/5	Talk and arrange refuge tour.
Long Lake Conservation Center	8/6	Talk and banding demonstration.
Covenant Pines Bible Camp	8/20	Talk and tour.
Long Lake Conservation Center	8/27	Talk and banding demonstration.
Cross Lake Church Group	9/3	Talk on Environment.
Brainerd Technical-Vocational School	9/21	Talk and tour.
Dam Lake Sportsmens Club	10/1	Talk and slides.
McGregor Flower Club	10/7	Picnic and tour.

In addition there were many small refuge tours for visitors and miscellaneous small groups.

An adequate carryover of deer went into the winter, some staying on the south side of the refuge and others moving into yards west to Portage and Dam Lakes. None appeared to want to winter in the islands on the north end.

2. Waterfowl:

Waterfowl hunting in the refuge vicinity was probably the worst experienced by local hunters in many years. Some limited spots provided fair shooting but the hunting was below par both for mallards and ringnecks, the primary targets here.

Only a few known kills were made on Canada geese flying out of the refuge. Locally raised birds visited familiar sites known also by local hunters and these took the bulk of the gunning pressure. In this area such sites are small ponds, brooks and rivers, sometimes rice paddies. Cropped fields are uncommon but those that do exist get interest from refuge geese.

3. Grouse Hunting:

The refuge grouse hunting area had a fair population of ruffed grouse and pressure was moderate to light. A commonly accepted method of bagging grouse is to cruise the back roads and trails by car until a bird is noted. It is usually shot on the ground and the cruise continues. The trails along the refuge boundary received heavy use of this type. Since the birds come to the roads for food and grit, this is often quite a successful and not-too-tiring method of bagging a few birds. Those hunters who tramped the woods and refuge trails worked hard for their birds. Good dogs appeared scarce.

E. Fishing:

Another good run of northern pike during the spring provided a summer of excellent fishing for visitors to the refuge fishing area. Although the dry summer brought water levels down the success on northerns and bullheads remained remarkably good. Most fish caught were of keeper size with an occasional lunker taken to spice up the challenge. Again, most fishermen preferred to fish from the bridge or shoreline. The attitude of most was excellent.

F. Violations:

A number of minor hunting violations were discouraged by patrol and distribution of information. Many users were contacted in conducting bag checks and this provided an excellent opportunity to answer questions relative to refuge use. Investigation of a

bear-shooting brought general information on a hunter group but evidence was insufficient. Another bear shooting was also reported.

Some gripes were received on fishermen taking more than a limit but no complaints were lodged in time for apprehension. There was some indication of fishing with two lines. None was actually caught in the act. They were generally a good group who appreciated the facilities provided.

No evidence of ricing trespass was noted. Although some snowmobile trespass occurred it was not as prevalent as the previous year. Early press releases and contacts with sportsmen's clubs probably helped in this respect. One of the activities was chasing coyotes on Rice Lake. This is illegal in Minnesota.

G. SAFETY:

Staff meetings were held periodically and SAFETY matters discussed. Personnel were encouraged to bring up and correct any unsafe conditions noted.

The refuge received a safety certificate for the year.

VII OTHER ITEMS

A. Sandstone Unit:

Good progress was made in preliminary planning and management of the Sandstone Unit in 1970.

1. Posting was completed on all known lines. Some survey work will be necessary on the west side of Kettle River.
2. Elevations were run and a dike was laid out and staked. Culvert and slide gate control were delivered to the site of the impoundment.
3. Plans are complete through S.C.S. Aid for a second water impoundment on Trout Creek.
4. Soils surveys are complete and the maps for this area should be valuable in management planning.
5. About 200 acres were planted to legumes just prior to transfer of the land and rocks have been picked on this area.
6. Aerial maps of the area have been secured and will help with type mapping.

7. Plans have been made through the Pine City Vocational School to use their heavy equipment training program for some of the development work on this area. This includes impoundments and road work. Some of the latter has already been done. Bridge decking purchased by the refuge was installed by a training class of prison inmates and roads were bladed. A section of new access road was built at the north entrance to the refuge. This is not yet complete.

A good deer herd exists on the refuge. Checks have shown that these animals move off the refuge a great deal and are thus subject to some hunting pressure. During the winter they disperse over a large area, much of it in the river bottoms outside of the refuge. Their winter conditions to-date have been excellent.

Present known use of the refuge by waterfowl includes mallards, wood ducks and blue-winged teal. Blue and snow geese used the fields during migration. Planned development of water areas should increase waterfowl use.

Ruffed grouse and sharp-tailed grouse were found using the area in 1970. Snowshoe hares were noted also.

Foxes and coyotes were both observed by refuge personnel. Timber wolves are known to use the refuge vicinity.

Furbearers noted include mink, muskrat and weasel.

B. Items of Interest:

The Refuge Manager prepared Section I, part B, Section II, Section III, part A, Sections V, VI, VII, of this report. The Biological Technician prepared Section I, part A, Section III, parts B., C., D., E., Section IV, and portions of VI and VII. He also assembled and typed the report.

Under the revenue sharing program a check for $375.84 was presented to the Pine County Auditor and a check for $3,025.47 to the Aitkin County Auditor for use on schools and roads.

The Refuge Manager served as 4-H leader in Conservation, Photography and Shop and on Aitkin County Record Judging Panel.

The Master Plan was completed and distributed throughout the U.S.

All photographs were taken and processed by the Refuge Manager.

Mr. Leslie E. Drone, a long time W.A.E. employee at this station passed away August 14, 1970 following an operation for a brain tumor. He was a good man to know and will be missed.

Submitted by:

Carl E. Pospichal
(Signature)

Carl E. Pospichal
Refuge Manager
Title

Date: March 31, 1970

Approved, Regional Office:

Date: 4/8/71

James B. Monnin
(Signature)

ASST
Regional Refuge Supervisor

70-1

Biological Technician Thornbloom at his desk.

C.E.P.

70-2

Maintenanceman Hurd tuning up unit picked up on surplus.

C.E.P.


FORD

Manager Pospichal with second dugout found on refuge.

C.E.P.

A portion of the Rice Lake island was cleared of brush and seeded to blue-grass and clover.

C.E.P.

70-5

An alsike clover unit in the west fields heavily used by geese in the fall.

C.E.P.

In its second year the Beaver Pool produced broods of wood ducks and was used by several other species.

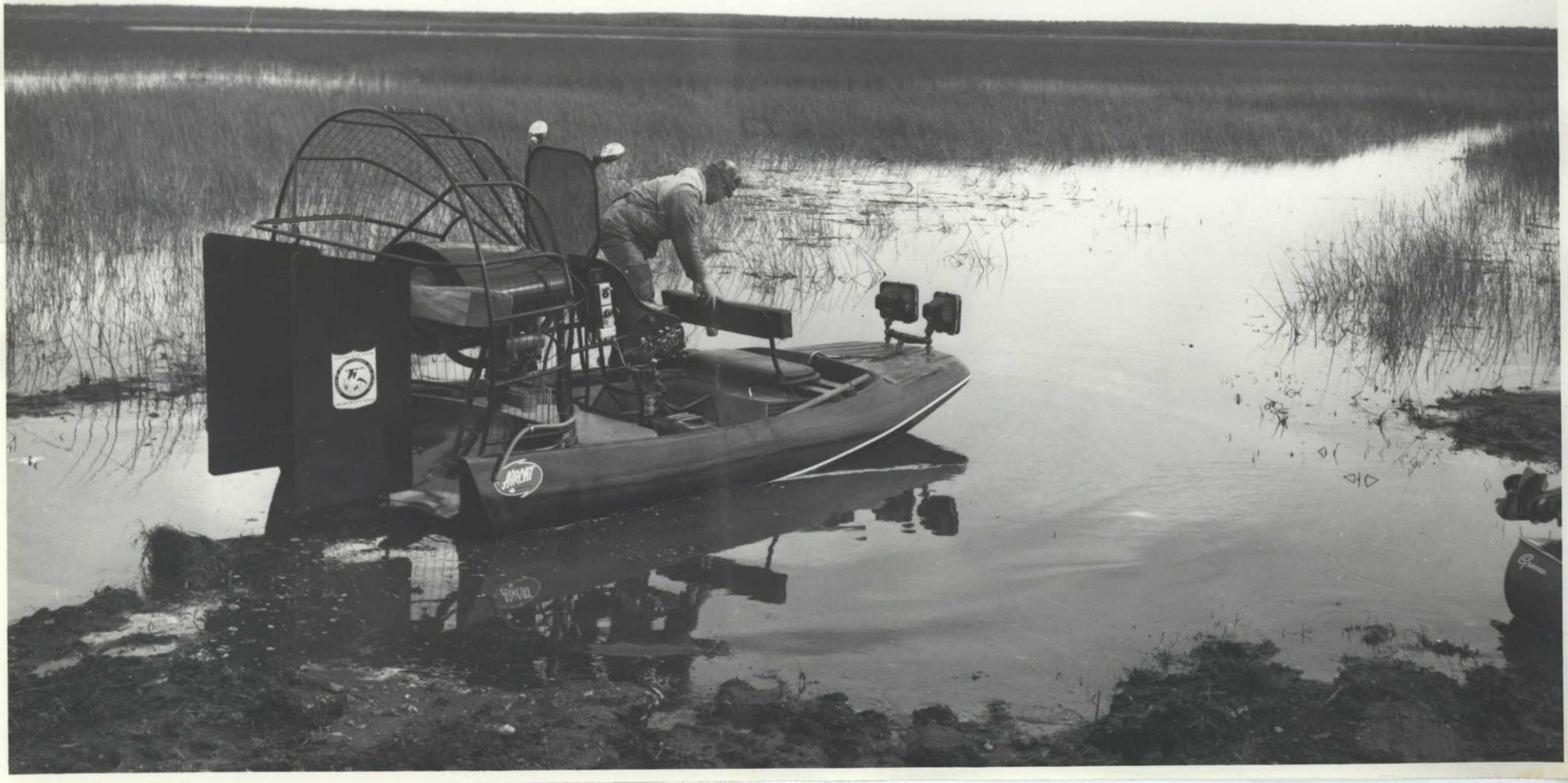
C.E.P.

The one remaining Bald Eagle nest on the refuge. The other was blown down.

C.E.P.

Dr. Cowardin checked out the air boat prior to night-lighting.

C.E.P.



70-9

A dark snowy owl.

C.E.P.

70-10

Thornbloom examines remains of deer found on Rice River.

C.E.P.

70-11

Ruffed Grouse.

C.E.P.

70-12

Otter.

C.E.P.

70-13

Beaver.

C.E.P.

70-14

Thornbloom checked winter den
of black bear.

C.E.P.

70-15

New area to be flooded and (insert)
small stoplog control.

C.E.P.

70-16

One of west field potholes in its third year.

C.E.P.

70-17

New toilets at the Twin Lakes picnic area. The old ones in background will be removed in the spring.

C.E.P.

3-1750
Form NR-1
(Rev. M h 1953)

W.A ERFOWL

REFUGE Rice Lake NWR

MONTHS OF September TO December, 19 70

(1) Species	Sept. 30 1 5	6 2 12	13 3 19	20 4 26	Oct. 27 5 3	4 6 10	11 7 17	18 8 24	25 9 31	Nov. 1 10 7
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	400	400	500	500	500	3,500	5,000	1,000	500	500
~~Cackling~~ Lesser						500	750	250	100	50
Brant										
White-fronted										
Snow				50	50	400	500	500	300	200
Blue				30	50	100	100	300	100	50
Other										
Ducks:										
Mallard	2,500	2,500	5,000	15,000	20,000	20,000	25,000	20,000	15,000	15,000
Black	300	400	600	600	1,000	1,000	1,500	800	500	500
Gadwall										
Baldpate	2,000	2,500	3,000	10,000	15,000	10,000	5,000	1,000	500	300
Pintail	300	300	300	500	1,500	1,500	500	200	100	50
Green-winged teal	1,000	1,000	1,000	2,000	5,000	6,000	3,000	2,000	1,000	500
Blue-winged teal	3,000	3,000	3,000	5,000	5,000	3,000	500	50	-	-
Cinnamon teal										
Shoveler	50	100	100	150	200	200	100	-	-	-
Wood	2,000	2,000	2,000	2,000	2,500	2,500	2,000	1,000	500	200
Redhead	20	50	50	200	500	1,000	1,000	500	200	100
Ring-necked	100	200	200	5,000	20,000	35,000	40,000	35,000	20,000	15,000
Canvasback	30	30	30	100	250	1,500	3,000	1,500	1,000	500
Scaup	30	30	30	100	200	1,000	2,000	2,000	5,000	10,000
Goldeneye	10	10	10	10	10	10	10	10	50	50
Bufflehead									10	50
Ruddy										
~~Other~~ Hooded Merg.	400	400	400	400	500	500	500	500	500	500
	200	300	500	8,000	10,000	15,000	5,000	1,000	500	100
Coot:										

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Cont NR-1
(1 March 1953)

WATER FOWL
(Continuation Sheet)

REFUGE Rice Lake NWR MONTHS OF September TO December, 19 70

(1) Species	(2) Weeks of reporting period: Nov. 8 11 14	15-21 12	22-28 13	Dec. 29-5 14	6-12 15	13-17 16	20-26 17	Jan. 27-2 18	(3) Estimated waterfowl days use	(4) Production Broods: seen	Estimated total
Swans:											
Whistling	250	150							2,800		
Trumpeter											
Geese:											
Canada	1,150	900							101,150		
~~Snow~~ Lesser									11,550		
Brant											
White-fronted											
Snow	150								15,000		
Blue	50								5,460		
Other											
Ducks:											
Mallard	15,000	500							1,088,500		
Black	1,000	50							57,750		
Gadwall											
Baldpate	50								345,450		
Pintail									36,050		
Green-winged teal	200								158,900		
Blue-winged teal									157,850		
Cinnamon teal											
Shoveler									6,300		
Wood	100								117,600		
Redhead	50								25,690		
Ring-necked	13,000								1,284,500		
Canvasback	450								58,730		
Scaup	3,000								184,730		
Goldeneye	100	10							2,030		
Bufflehead	50	10							840		
Ruddy											
~~Other~~ Hooded Merg.	500								32,200		
Coots:									284,200		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	2,800	280	
Geese	133,210	6,350	
Ducks	3,557,120	84,110	
Coots	284,200	15,000	

SUMMARY

Principal feeding areas Rice Lake, Rice River Pool and Farm Units.

Principal nesting areas

Reported by Carl E. Pospichal; Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

Form NR-1
(Rev. M h 1953)

WATERFOWL

REFUGE Rice Lake

MONTHS OF January TO April, 1929

(1) Species	(2) Weeks of reporting period										
	Jan. 1-3	4-10	11-17	18-24	25-31	Feb. 1-7	8-14	15-21	22-28	March 1-7	8-10
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard											2
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											

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Co[illegible] NR-1
([illegible] March 1953)

WATE[illegible] OWL
(Continuation Sheet)

REFUGE Rice Lake MONTHS OF January TO April, 1970

(1) Species	(2) Weeks of reporting period: 8 – 11	12 – 14	15 – 21	22 – 28	29 – 4	5 – 11	12 – 18	19 – 25	26 – 2	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:												
Whistling								10		70		
Trumpeter												
Geese:												
Canada		6			15	280	400	500	250	10,157		
Cackling												
Brant												
White-fronted												
Snow												
Blue												
Other												
Ducks:												
Mallard	2					300	400	800	1000	17,520		
Black						10	20	50	200	1,960		
Gadwall												
Baldpate						10	40	100	1000	8,050		
Pintail								300	400	4,900		
Green-winged teal								20	200	1,540		
Blue-winged teal									400	2,800		
Cinnamon teal												
Shoveler									50	350		
Wood						10	50	300	500	6,020		
Redhead												
Ring-necked							20	100	500	4,340		
Canvasback									100	700		
Scaup						10	100	300	1500	13,370		
Goldeneye						10	100	100		1,470		
Bufflehead							10	400	100	3,570		
Ruddy												
Other Hooded Merg.						20	200	500	300	7,140		
Coots: Common Merg.								50	100	1,050		
Greater Scaup							10	30		280		
Coot						20	100	100	200	2,940		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	70	10	
Geese	10,157	500	
Ducks	75,068	6,350	
Coots	2,940	200	

SUMMARY

Principal feeding areas Rice Lake, Rice River Pool and farm units.

Principal nesting areas

Reported by Carl E. Poepichal

Carl E. Poepichal; Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1
(Rev. M h 1953)

WATERFOWL

REFUGE Rice Lake MONTHS OF May TO August, 19 70

(1) Species	(2) Weeks of reporting period									
	May				June				July	
	1	2	3	4	5	6	7	8	9	10
	3 9	10 16	17 23	24 30	31 6	7 13	14 20	21 27	28 4	5 11
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	150	150	225	270	300	300	310	310	310	310
Cackling										
Brant										
White-fronted		4	4							
Snow	200	40	10	10						
Blue	100	10	10							
Other										
Ducks:										
Mallard	1000	500	500	550	600	600	700	900	1,000	1,000
Black	250	40	50	50	60	60	70	80	100	100
Gadwall	--	--	--	--	--	--	--	--	--	--
Baldpate	2,500	500	500	500	500	550	600	700	800	1,000
Pintail	500	100	30	10	--	--	--	--	--	--
Green-winged teal	1,000	400	400	400	400	450	500	600	600	600
Blue-winged teal	2,000	1,200	1,000	600	600	650	700	800	900	1,000
Cinnamon teal	--	--	--	--	--	--	--	--	--	--
Shoveler	500	200	100	20	20	20	30	40	40	40
Wood	700	700	700	800	800	850	900	1,000	1,100	1,200
Redhead	50	50	--	--	--	--	--	--	--	--
Ring-necked	3,000	1,500	600	100	50	50	70	80	80	80
Canvasback	200	50	30	10	10	10	20	30	30	30
Scaup	4,000	2,000	2,000	400	50	20	20	30	30	30
Goldeneye	--	--	--	--	--	--	--	--	--	--
Bufflehead	50	--	--	--	--	--	--	--	--	--
Ruddy	--	--	--	--	--	--	--	--	--	--
Other Hooded Mergans.	200	200	200	250	250	280	350	400	400	400
Coot:	500	200	100	100	100	100	150	150	150	150

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Cons NR-1
(1 March 1953)

WATER FOWL
(Continuation Sheet)

REFUGE Rice Lake MONTHS OF May TO August, 19 20

(1) Species	(2) Weeks of reporting period: 12	11	18	19	12	25	26	Aug. 13	31	2	14	8	9	15	15	16	22	23	29	17	18	(3) Estimated waterfowl days use	(4) Production Broods: seen	Estimated total
Swans:																								
Whistling																								
Trumpeter																								
Geese:																								
Canada	310			310			300			350			350			400				400		35,385	32	150
Cackling																								
Brant																								
White-fronted																						56		
Snow																						1,820		
Blue																						840		
Other																								
Ducks:																								
Mallard	1,000			1,200			1,200			1,500			1,500			2,000				2,500		127,250	24	270
Black	100			100			100			200			200			300				300		15,120	3	20
Gadwall	--			--			--			--			--			--				--		--	--	--
Baldpate	1,000			1,000			1,000			1,500			1,500			2,000				2,000		127,050	32	400
Pintail	--			10			10			50			100			100				200		2,720	1	10
Green-winged teal	600			600			700			700			800			800				1,000		23,850	18	200
Blue-winged teal	1,000			1,000			1,000			1,200			1,500			2,000				2,500		137,550	20	300
Cinnamon teal	--			--			--			--			--			--				--		--	--	--
Shoveler	40			40			40			40			40			50				50		9,170	1	10
Wood	1,200			1,200			1,200			1,500			1,500			2,000				2,000		135,450	30	400
Redhead	--			10			10			10			10			20				20		1,260	1	10
Ring-necked	80			80			80			100			100			100				100		43,250	3	50
Canvasback	30			30			30			30			30			30				30		4,410	1	10
Scaup	30			20			20			30			30			30				30		61,390	2	10
Goldeneye	--			10			10			10			10			10				10		420	--	10
Bufflehead	--			--			--			--			--			--				--		350	--	--
Ruddy	--			--			--			--			--			--				--		--	--	--
Other Hooded Merganser	400			400			400			400			400			500				500		41,510	12	150
Coots:																								
	150			200			200			200			250			250				250		22,400	9	50

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	--	--	--
Geese	38,101	400	150
Ducks	768,800	15,950	1,850
Coots	22,400	500	50

SUMMARY

Principal feeding areas Rice Lake, Rice River Pool, ponds and farm units.

Principal nesting areas Areas bordering water

Reported by Carl E. Pospichal; Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Rice Lake Months of May to August 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	4	5/1	Summer resident							10
Horned Grebe	10	5/5	20	5/7						50
Pied-billed Grebe	Summer resident									200
Great Blue Heron	Common summer resident						1	40	80	200
American Bittern	Summer resident									75
Sandhill Crane	Summer resident									4
Sora	Summer resident									500
Virginia Rail	Summer resident									50
Belted Kingfisher	Summer resident									20
II. Shorebirds, Gulls and Terns:										
Lesser Yellowlegs	50	5/5	Summer visitor							100
Common Snipe	Common summer resident									200
Killdeer	Common summer resident									100
Spotted Sandpiper	Common summer resident									100
Common tern	3	5/16	Fairly common summer visitor							150
Black tern	Common summer resident									250
Herring Gull	Occasional summer visitor									10
Ring-billed Gull	Regular summer visitor									30

(over)

(1)	(2)		(3)	(4)	(5)		(6)
III. Doves and Pigeons:							
Mourning dove	4	5/7	Summer resident- uncommon				20
White-winged dove							
IV. Predaceous Birds:							
~~Golden~~ eagle (Bald)	Summer resident				1	2	20
~~Duck hawk~~ Barred Owl	Resident						50
Horned owl	Resident						20
~~Magpie~~ Screech Owl	Resident						20
Raven	Resident						30
Crow	Resident						1,000
Goshawk	1	5/3	Resident				2
Broad-winged Hawk	3	5/13	Resident				50
Red-tailed Hawk	Resident						50
Marsh Hawk	Resident						50
Rough-legged Hawk	Resident						10
Sparrow Hawk	Resident						150
Sharp-shinned Hawk	Resident						20
Cooper's Hawk	Resident						5
Osprey	Visitor						5
Turkey Vulture	Visitor						10

Reported by [illegible]

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total numb of the speci using the refu during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1751
Form NR-1.
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Rice Lake Months of January to April 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	1	4/16	10	4/28	Summer	Resident				
Pied-billed Grebe	3	4/14	70	4/26	Summer	resident				
Horned Grebe	2	2/28	10	4/30						
Red-necked Grebe	2	4/18	4	4/30						
Great Blue Heron	11	4/5	100	4/30	Summer	resident				
American Bittern	1	4/26	10	4/30	Summer	resident				
Sandhill Crane	2	4/11	4	4/30	Summer	resident				
Belted Kingfisher	1	4/15	10	4/30	Summer	resident				
II. Shorebirds, Gulls and Terns:										
Killdeer	1	4/8	Common thereafter							
Common Snipe	2	4/9	Common thereafter							
Spotted Sandpiper	3	4/28	Common thereafter							
Lesser Yellowlegs	2	4/26	10	4/30						
Ring-billed Gull	20	4/9	30	4/30						
Herring Gull	5	4/5	10	4/30						

(over)

(1)	(2)		(3)		(4)	(5)	(6)
III. Doves and Pigeons:							
Mourning dove	1	4/20	4	4/30			
White-winged dove							
IV. Predaceous Birds:							
Golden eagle (Bald)	2	2/27	8	4/17	Pr. at nest 3/4/70		
Duck hawk (Red-tailed)	1	3/26	10	4/11			
Horned owl	Year-round res.; occasional obs.						
Magpie	Occasional visitor; singles						
Raven	Year-round resident; common to 30/flock						
Crow	5-10 present throughout winter; not generally present in Dec. & Jan.						
Northern Shrike	2	1/1	10	4/30			
Sparrow Hawk	1	3/19	50	4/17	Summer res.		
Barred Owl	Fairly common; occasional observation; perm. res.						
Rough-legged Hawk	2	3/24	20	4/1			
Sharp-shinned Hawk	1	3/19	Occasional				
Goshawk	1	4/1	Occasional				
Marsh Hawk	1	4/1	20	4/17			
Turkey Vulture	3	4/17	10	4/28			
Osprey	1	4/24	Occasional vis.				

Reported by Carl E. Poppichal

Carl E. Poppichal; Refuge Mgr.

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) tal: Estimated total numb of the speci using the refug during the period concerned.

3-1751
Form NR-.
(Nov. 1945)

MIGRAT BIRDS
(other than waterfowl)

Refuge Rice Lake NWR Months of September to December xxx1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Summer	Resident	15	10/15	1	11/4				
Pied-billed Grebe	"	"	100	10/4	2	10/29				
Great Blue Heron	"	"	75	9/1	1	11/4				
American Bittern	"	"	50	9/1	1	10/15				
Sora Rail	"	"	500	9/10	3	9/20				
Virginia Rail	"	"	50	9/1	1	9/20				
Sandhill Crane	"	"	4	10/15	2	11/4				
Belted Kingfisher	"	"	10	10/1	1	11/4				
II. Shorebirds. Gulls and Terns:										
Killdeer	Summer	Resident	100	9/1	1	10/15				
Semi-palmated Plover			10	9/15						
Golden Plover	15	9/10								
Common Snipe	Summer	Resident	500	9/22	5	10/15				
Spotted Sandpiper	"	"	100	9/15	2	11/4				
Pectoral Sandpiper			50	9/9						
Least Sandpiper			10	9/15						
Lesser Yellowlegs	20	9/1	150	10/1	5	11/4				
Black Tern	Summer	Resident	100	9/15	5	9/20				
Common Tern	"	"	150	9/1	3	9/15				
Ring-billed Gull	Summer	Visitor	50	10/15	2	11/4				
Herring Gull	"	"	10	10/15	1	10/30				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
IV Predaceous- Cont. from below:								
III. Doves and Pigeons:								
Osprey	Occ. Visitor		2					
Coop. Hawk Mourning dove	1	10/4						
White-winged dove	1	9/16	5	9/23				
Turkey Vulture	Reg. Vis.		10	11/5				
Northern Shrike								
IV. Predaceous Birds:								
Bald eagle	Summer Resident		22	11/13	2	11/27		
Golden eagle	1	9/14						
Duck hawk	Resident		10	9/1				
Horned owl			1	11/4				
Magpie	Resident		15	11/24	5	12/30		
Raven	Resident		300	10/15	30	12/26		
Crow	"		20	9/1				
Barred Owl	"		10	9/1				
Screech Owl	1	12/25						
Saw Whet Owl	1	12/10	3	12/15	1	12/30		
Snowy Owl	Summer Resident		20	10/15	6	11/4		
Marsh Hawk	5	9/1	10	10/15	5	12/3		
Rough-legged Hawk	Summer Resident		20	9/1				
Broad-winged Hawk	"	"	30	10/15	5	11/4		
Red-tailed Hawk	2	12/10						
Goshawk	Summer Resident		120	9/23				
Sparrow Hawk	"	"	2	9/1				
Sharp-shinned Hawk								

Reported by Carl C. Poeppelhaj, Refuge Manager

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Rice Lake For 12-month period ending August 31, 1970

Reported by Carl E. Rospichal Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3)	(3) Use-days	(4) Breeding Population	(5) Production
Rice Lake	Crops	---	Ducks	3,010,000	750	400
	Upland	---	Geese	25,000	10	25
	Marsh	500	Swans	3,200	---	---
	Water	4,500	Coots	236,000	50	50
	Total	5,000	Total	3,276,200	810	475
Rice River Pool	Crops	---	Ducks	612,000	490	270
	Upland	240	Geese	31,200	16	30
	Marsh	1,550	Swans	10	---	---
	Water	1,200	Coots	1,500	---	---
	Total	2,990	Total	644,710	466	300
Rice River and Tributaries	Crops	---	Ducks	210,000	1,300	610
	Upland	245	Geese	30,000	20	35
	Marsh	340	Swans	---	---	---
	Water	65	Coots	500	---	---
	Total	650	Total	240,500	1,320	645
Ponds, Potholes & Ditches	Crops	---	Ducks	100,068	1,080	490
	Upland	175	Geese	8,000	54	60
	Marsh	1,065	Swans	---	---	---
	Water	73	Coots	10	---	---
	Total	1,313	Total	108,078	1,098	550
Mandy and Twin Lakes	Crops	---	Ducks	25,000	50	30
	Upland	70	Geese	528	---	---
	Marsh	100	Swans	---	---	---
	Water	106	Coots	500	---	---
	Total	276	Total	26,428	50	30
Agricultural Units	Crops	241	Ducks	150,700	100	50
	Upland	97	Geese	28,500	---	---
	Marsh	---	Swans	---	---	---
	Water	---	Coots	---	---	---
	Total	338	Total	179,200	100	50
Grand Total	Crops	241	Ducks	4,107,768	3,690	1,850
	Upland	627	Geese	123,228	100	150
	Marsh	3,555	Swans	3,710	---	---
	Water	5,944	Coots	240,990	50	50
	Total	10,567	Total	4,475,296	3,840	2,050

(over)

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August narrative report.

INSTRUCTIONS

(1) **Area or Unit:** A geographical unit that, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. Estimated acreage of each unit should be indicated.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type including wet meadow and deep marsh; and the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C.
1956

3-1750
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Rice Lake NWR

Year 1970

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
			No waterfowl hunting on refuge.					

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Rice Lake Months of September to December, 1920

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	5,000 acres timber and brush	16				100			300	Fairly good population going into the winter.
Sharp-tailed Grouse	1200 acres grass, brush and cropland	30							40	Population about the same as last year; most use in west fields and northeast side of refuge.
Woodcock	8,000 acres timber, brush, grassland and marsh	160							50	Light local population and no major migrational use noted.
Ring-necked Pheasant	Occasional temporary use of refuge by birds from private neighboring releases; peak noted was 7.									

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts,etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Rice Lake Months of January to April, 19 70

*

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	8,000 acres timber and brushland.	27							300	Spring population density about the same as a year ago. Drumming by mid-April.
Sharp-tailed Grouse	2,000 acres grass, brush and cropland.	50							40	Spring count up considerably from 10 noted a year ago. Birds also more widely distributed over area.
Woodcock	5,000 acres timber, brush.	500							10	Estimated use; no migration noted this spring; only 2 east side.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts,etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

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(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Rice Lake Months of May to August, 19 70

*

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	5,000 acres of timber and brush	10	12	200					500	Promising spring signs of drumming-nesting-broods but birds not much in evidence at end of this period.
Sharp-tailed Grouse	1200 acres grass, brush and cropland	30	3	20					40	Known dancing grounds used by only one cock but production was encouraging.
Woodcock	8,000 acres of timber, brush, grass and marshland.	160	1	10					50	Only occasional late-eve observations made.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts,etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-17
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Rice Lake Year ending April 30, 1970

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Badger														10
Beaver														30
Franklin's Gr. Sq.														Uncommon
13-lined Gr. Sq.														Very common
Snowshoe Hare														Uncommon
Mink														30
Muskrat			5											350
River Otter														10
Porcupine														60
Cottontail rabbit														None noted
Raccoon				73										300
Striped Skunk				7										100
Fox Squirrel														Rare
Gray Squirrel														Fairly com.
Red Squirrel														Common
Flying Squirrel														Fairly com.
Chipmunk														Common
Weasel														Fairly com.
Woodchuck														Fairly com.
Red Fox														10
Coyote														6
Bobcat														5

* List removals by Predator Animal Hunter

REMARKS:

Reported by Carl E. Pospichal; Refuge Mgr.

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

3-1[illegible]3
Form NR-3
(June 1945)

B[illegible] GAME

Refuge Rice Lake Calendar Year 1970

(1) * Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	12,000 acres marsh and upland	50	53									150	50	
Moose	12,000 acres marsh and upland	—	—									* 2	—	
Black Bear	12,000 acres marsh and upland	5	**									10	5	

Remarks: * Transient; use temporary. ** One bear was reported illegally taken and one was wounded but escaped.

Reported by Carl E Pearsall

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755
Form R-5
6070

DISEASE

Refuge RICE LAKE NWR Year 1970

Botulism

Period of outbreak NONE

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease NONE

Species affected _____

Number Affected Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

3-1757
Form NR-7
(Rev. June 1960)

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Rice Lake NWR Year 1970

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Wild Rice	1,664	C	9/8 - 9/22	Hand flail by Indians			Area immed. north of Rice Landing approx. 30 yards off shore.	40#/Acre	8 acres	wild rice	9/22	Unknown*	

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic 8
Hedgerows, cover patches
Food strips, food patches
Forest plantings

Remarks: 300 pounds retained and seeded into Rice Lake. Balance of 1,364 pounds donated to State of Minnesota for reseeding rice producing lakes in refuge area.
* Results of survival will not be known until spring and summer of 1971.

3-175
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Rice Lake NWR County Aitkin State Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Corn	-	-	-	-	28	25	28	Mowed hay strips	145
Oats	-	-	-	-	24	15	22	Rye	14
Buckwheat	-	-	-	-	23	10	23		
								Fallow Ag. Land	18

No. of Permittees: Agricultural Operations - Haying Operations 7 Grazing Operations 2

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	32	176	$176.00	
				2. Other				
				1. Total Refuge Acreage Under Cultivation				250
Hay - Wild	286		$286.00	2. Acreage Cultivated as Service Operation				250

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.DUP.,D.C.61-88850

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Rice Lake NWR Months of January through December, 1970

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn	275	-	275			50	50	225		225	
Rye	103	-	103		20		20	83	83		

(8) Indicate shipping or collection points

(9) Grain is stored at Refuge grainery.

(10) Remarks

*See instructions on back.

16—61482-1

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

16—61482-1 U. S. GOVERNMENT PRINTING OFFICE

3-1761
Form NR-11

TIMBER REMOVAL

Refuge Rice Lake NWR Year 1970

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
No timber removal this year.								

Total acreage cut over.....

Total income.....

No. of units removed B. F.....
Cords.....
Ties.....
.....

Method of slash disposal.....

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Rice Lake NWR

Proposal Number: 1

Reporting Year: 1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/19	Quack grass	West Fields	28	Atrazine 80%	10#	3#/acre	Water	Ground Equip.

10. Summary of results (continue on reverse side, if necessary)

About 90% kill.

35500

WATERFOWL

REFUGE Rice Lake NWR MONTHS OF September TO December, 19 70

(1) Species	Sept. 30 1-5	6 2-12	13 3 19	20 4- 26	Oct. 27 5 3	4 6-10	11 7 17	18 8 24	25 9 31	Nov. 1 10-7
(2) Weeks of reporting period										
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	400	400	500	500	500	3,500	5,000	1,000	500	500
~~Cackling~~ Lesser						500	750	250	100	50
Brant										
White-fronted										
Snow				50	50	400	500	500	300	200
Blue				30	50	100	100	300	100	50
Other										
Ducks:										
Mallard	2,500	2,500	5,000	15,000	20,000	20,000	25,000	20,000	15,000	15,000
Black	300	400	600	600	1,000	1,000	1,500	800	500	500
Gadwall										
Baldpate	2,000	2,500	3,000	10,000	15,000	10,000	5,000	1,000	500	300
Pintail	300	300	300	500	1,500	1,500	500	200	100	50
Green-winged teal	1,000	1,000	1,000	2,000	5,000	6,000	3,000	2,000	1,000	500
Blue-winged teal	3,000	3,000	3,000	5,000	5,000	3,000	500	50	-	-
Cinnamon teal										
Shoveler	50	100	100	150	200	200	100	-	-	-
Wood	2,000	2,000	2,000	2,000	2,500	2,500	2,000	1,000	500	200
Redhead	20	50	50	200	500	1,000	1,000	500	200	100
Ring-necked	100	200	200	5,000	20,000	35,000	40,000	35,000	20,000	15,000
Canvasback	30	30	30	100	250	1,500	3,000	1,500	1,000	500
Scaup	30	30	30	100	200	1,000	2,000	2,000	5,000	10,000
Goldeneye	10	10	10	10	10	10	10	10	50	50
Bufflehead									10	50
Ruddy										
~~Other~~ Hooded Merg.	400	400	400	400	500	500	500	500	500	500
	200	300	500	8,000	10,000	15,000	5,000	1,000	500	100
Coot:										

3-1750a
Con' NR-1
(Re. March 1953)

WATER FOWL
(Continuation Sheet)

REFUGE Rice Lake NWR MONTHS OF September TO December, 19 70

(1) Species	(2) Weeks of reporting period: Nov. 8 11 14	15-21 12	22-28 13	29-5 Dec. 14	6-12 15	13-17 16	20-26 17	27-2 Jan. 18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling	250	150							2,800		
Trumpeter											
Geese:											
Canada	1,150	500							101,150		
~~Cackling~~ Lesser									11,550		
Brant											
White-fronted											
Snow	150								15,050		
Blue	50								5,460		
Other											
Ducks:											
Mallard	15,000	500							1,088,500		
Black	1,000	50							57,750		
Gadwall											
Baldpate	50								345,450		
Pintail									36,050		
Green-winged teal	200								158,900		
Blue-winged teal									157,850		
Cinnamon teal											
Shoveler									6,300		
Wood	100								117,600		
Redhead	50								25,690		
Ring-necked	13,000								1,284,500		
Canvasback	450								58,730		
Scaup	5,000								184,730		
Goldeneye	100	10							2,030		
Bufflehead	50	10							840		
Ruddy											
~~Other~~ Hooded Merg.	500								32,200		
Coots:									284,200		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	2,800	250	
Geese	133,210	6,350	
Ducks	3,557,120	84,110	
Coots	284,200	15,000	

SUMMARY

Principal feeding areas Rice Lake, Rice River Pool and Farm Units.

Principal nesting areas

Reported by Carl E. Pospichal

Carl E. Pospichal; Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual):

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Rice Lake NWR Months of September to December 1970

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Summer	Resident	15	10/15	1	11/4				
Pied-billed Grebe	"	"	100	10/4	2	10/29				
Great Blue Heron	"	"	75	9/1	1	11/4				
American Bittern	"	"	50	9/1	1	10/15				
Sora Rail	"	"	500	9/10	3	9/20				
Virginia Rail	"	"	50	9/1	1	9/20				
Sandhill Crane	"	"	4	10/15	2	11/4				
Belted Kingfisher	"	"	10	10/1	1	11/4				
II. Shorebirds, Gulls and Terns:										
Killdeer	Summer	Resident	100	9/1	1	10/15				
Semi-palmated Plover			10	9/15						
Golden Plover	15	9/10								
Common Snipe	Summer	Resident	500	9/22	5	10/15				
Spotted Sandpiper	"	"	100	9/15	2	11/4				
Pectoral Sandpiper			50	9/9						
Least Sandpiper			10	9/15						
Lesser Yellowlegs	20	9/1	150	10/1	5	11/4				
Black Tern	Summer	Resident	100	9/15	5	9/20				
Common Tern	"	"	150	9/1	3	9/15				
Ring-billed Gull	Summer	Visitor	50	10/15	2	11/4				
Herring Gull	"	"	10	10/15	1	10/30				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
IV Predaceous- Cont. from below:								
~~III Doves and Pigeons~~								
~~Mourning dove~~ Osprey	Occ. Visitor		2					
Coop. White-winged dove Hawk	1	10/4						
Turkey Vulture	1	9/16	5	9/23				
Northern Shrike	Reg. Vis.		10	11/5				
IV. Predaceous Birds:								
Bald ~~Golden~~ eagle	Summer Resident		22	11/13	2	11/27		
Duck hawk	1	9/14						
Horned owl	Resident		10	9/1				
Magpie			1	11/4				
Raven	Resident		15	11/24	5	12/30		
Crow	Resident		300	10/15	30	12/26		
Barred Owl	"		20	9/1				
Screech Owl	"		10	9/1				
Saw Whet Owl	1	12/25						
Snowy Owl	1	12/10	3	12/15	1	12/30		
Marsh Hawk	Summer Resident		20	10/15	6	11/4		
Rough-legged Hawk	5	9/1	10	10/15	5	12/8		
Broad-winged Hawk	Summer Resident		20	9/1				
Red-tailed Hawk	"	"	30	10/15	5	11/4		
Goshawk	2	12/10						
Sparrow Hawk	Summer Resident		120	9/23				
Sharp-shinned Hawk	"	"						

Reported by [signature]
Carl E. Pospichal; Refuge Manager

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appfo-priate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Rice Lake NWR

Year 1970 ~~196x~~

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
			No waterfowl hunting on refuge.					

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Rice Lake Months of September to December, 1970

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	5,000 acres timber and brush	16				100			300	Fairly good population going into the winter.
Sharp-tailed Grouse	1200 acres grass, brush and cropland	30							40	Population about the same as last year; most use in west fields and northeast side of refuge.
Woodcock	8,000 acres timber, brush, grassland and marsh	160							50	Light local population and no major migrational use noted.
Ring-necked Pheasant	Occasional temporary use of refuge by birds from private neighboring release; peak noted was 7.									

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7). REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Rice Lake Calendar Year 1970

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	12,000 acres marsh and upland	50	53									150	50	
Moose	12,000 acres marsh and upland	--	--									* 2	--	
Black Bear	12,000 acres marsh and upland	5	**									10	5	

Remarks: * Transient; use temporary. ** One bear was reported illegally taken and one was wounded but escaped.

Reported by Orlo E. Pospichal

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755
Form NR-5
60701

DISEASE

Refuge RICE LAKE NWR Year 19.70

Botulism

Period of outbreak NONE

Period of heaviest losses

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage)

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life

Remarks

Lead Poisoning or other Disease

Kind of disease NONE

Species affected

Number Affected Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

(1)

3-1757
Form NR-7
(Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Rice Lake NWR Year 1970

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Wild Rice	1,664	C	9/8 - 9/22	Hand flail by Indians			Area immed. north of Rice Landing approx. 30 yards off shore.	40#/Acre	8 acres	wild rice	9/22	Unknown*	

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic 8
Hedgerows, cover patches
Food strips, food patches
Forest plantings

Remarks: 300 pounds retained and seeded into Rice Lake. Balance of 1,364 pounds donated to State of Minnesota for reseeding rice producing lakes in refuge area.
* Results of survival will not be known until spring and summer of 1971.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Rice Lake NWR County Aitkin State Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Corn	-	-	-	-	28	25	28	Mowed hay strips	145
Oats	-	-	-	-	24	15	22	Rye	14
Buckwheat	-	-	-	-	23	10	23		
								Fallow Ag. Land	18

No. of Permittees: Agricultural Operations - Haying Operations 7 Grazing Operations 2

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	32	176	$176.00	80
				2. Other				
				1. Total Refuge Acreage Under Cultivation				250
Hay - Wild	286	300	$286.00	2. Acreage Cultivated as Service Operation				250

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.DUP.,D.C.61-88850

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Rice Lake NWR Months of January through December, 1970

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn	275	-	275			50	50	225		225	
Rye	103	-	103		20		20	83	83		

(8) Indicate shipping or collection points

(9) Grain is stored at Refuge grainery.

(10) Remarks

*See instructions on back.

16—61482-1

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

16—61482-1 U. S. GOVERNMENT PRINTING OFFICE

3-1761
Form NR-11

TIMBER REMOVAL

Refuge Rice Lake NWR Year ~~19XX~~ 1970

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
No timber removal this year.								

Total acreage cut over.....

Total income.....

No. of units removed B. F.....
Cords.....
Ties.....
.....

Method of slash disposal.....

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Rice Lake NWR

Proposal Number: 1

Reporting Year: 1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/19	Quack grass	West Fields	28	Atrazine 80%	100#	3#/acre	Water	Ground Equip.

10. Summary of results (continue on reverse side, if necessary)

About 90% kill.

35500